

**Notice of Allowability**

Application No.

10/783,212

Examiner

Marc S. Zimmer

Applicant(s)

YEAGER, GARY WILLIAM

Art Unit

1712

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 02/20/04.
2. ☒ The allowed claim(s) is/are 1-32.
3. ☐ The drawings filed on \_\_\_\_\_ are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All   b) ☐ Some\*   c) ☐ None   of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

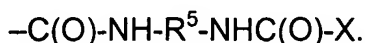
5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),  
Paper No./Mail Date 05/24/04
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_.
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_.

***Allowable Subject Matter***

Applicant discloses a polyarylene ether having endgroups of specified structure. In particular, the polymer necessarily contains terminal vinyl groups (or acrylo groups where  $n = 1$ ) that are indirectly bonded to the polymer backbone via a residue that, at a minimum, is comprised of the residue



Each of the variables  $\text{R}^6$ , a group X adjacent to  $\text{R}^6$  on the side opposite of the polymer chain, and a group (CO) adjacent to X on the side opposite of the polymer chain are optional as indicated by Applicant's stipulation that "a", "b", and "n" are equal to either 0 or 1. The most direct synthetic approach for preparing a bridging residue having these structural attributes is to modify the hydroxyl terminal groups with a diisocyanate and, in turn, with an  $\alpha,\beta$ - ethylenically unsaturated compound or acrylate having isocyanate-reactive moieties X-H at the opposite end. In fact, this is the method disclosed by Applicant but the Examiner attempted to consider other possible, albeit less efficient, methods of making the claimed compounds so as to not unnecessarily limit the search for the compounds and compositions containing the same.

The prior art contains numerous teachings of polyarylene ethers (hereinafter PAE) that have been modified by the placement of an ethylenically unsaturated group at a terminus of the polymer, many of which were reported by the same inventor as that of the present invention. Further, in many of these cases, it is contemplated that the modified PAE could be used as a macromonomer in the construction of polyolefin- or acyclic copolymers. See, for instance, Ishii et al., U.S. Patent Application Publication No.

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2004/0132941, Brandstetter et al., DE 3117514, Guo et al., U.S. Patent # 6,608,166, Yeager, U.S. Patent # 6,812,276, Yeager et al., U.S. Patent # 6,627,704, and Tracy et al., U.S. patent # 6,051,662. However, in none of these documents was it ever considered to carry out a modification that would result in the realization of bridging moiety equivalent to that presently claimed.

On the other hand, the prior art does teach instances where a PAE was reacted with a diisocyanate, usually for the purpose of crosslinking the polymer or extending it. See Fox, U.S. Patent # 3,375,298, JP 50-129698 A, and Okamoto et al., JP 63-312351. In none of these references was it suggested that modification would be followed by reaction with an ethylenically unsaturated compound also bearing isocyanate-reactive groups. Indeed, capping the free isocyanate group with the aforementioned compound would destroy the reference because the diisocyanate would no longer be capable of crosslinking the PAE or, for that matter, extending its chains.

The above-cited documents represent the most germane prior art known. Insofar as they alone or in combination fail to even render obvious the instant invention, claims 1-32 are allowable.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marc S. Zimmer whose telephone number is 571-272-1096. The examiner can normally be reached on Monday-Friday 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on 571-272-1302. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

May 31, 2005

*Marc Zimmer*  
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AU 1712